

Tennessee Pollution Prevention Partnership Success Story



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Y-12 Helps Clear the Air with E-85

The Member

The Y-12 National Security Complex is a high-precision manufacturing, assembly and inspection complex comprised of over 20 facilities and organizations located in Anderson County on 800 acres near Oak Ridge, Tennessee. Operated by Babcock & Wilcox Technical Services Y-12 L.L.C. (B&W Y-12) for the National Nuclear Security Administration, Y-12 plays a vital role in the Department of Energy's (DOE) Nuclear Weapons Complex.

The Story

B&W Y-12 is committed to expanding the use of bio-based fuels in its vehicle fleet to reduce toxic emissions and dependence on foreign energy sources. Underpinning this commitment is the fact that Anderson County is in non-attainment for some of the pollutants present in vehicle emissions, and DOE and Presidential Executive orders call for federal fleets to be converted to bio-based fuels to improve the energy security of the United States. Bio-based fuels are made from plant-based materials such as corn and grains which are renewable resources 'made in the U.S.A.'. In addition, bio-fuels have been shown to significantly lower tail pipe emissions of carbon monoxide (CO), ozone-forming volatile organic compounds (VOC), nitrogen oxides (NOx), sulfates (SOx) and particulate matter (PM) in comparison to gas-powered vehicle emissions.

The Y-12 fleet is comprised of 515 gasoline-powered vehicles, of which 76 are flexible fuel vehicles (FFV) that can burn E-85 (i.e., 85% ethanol and gasoline mixture). Y-12 has in place an ongoing program to purchase more FFV's to replace gasoline-powered vehicles that are removed from service, and has one fueling station on site providing E-85. B&W Y-12 has completed various initiatives to increase the use of bio-based fuels by improving E-85 usage rates.

Before this project was implemented, FFV drivers at Y-12 could choose between regular gasoline and E-85 when they fueled their vehicle at Y-12 fueling

stations. When E-85 became available to the Complex in October 2004, E-85 usage rates were lower than expected due to low driver awareness of E-85 availability, resistance to change, and possible misconceptions about E-85 costs and safety. Beginning in October 2005, Y-12 changed fueling policies and procedures to make it mandatory that all FFV drivers use E-85 while on-site. "E-85 Only" decals were placed on FFV gas caps, and large "E-85 85% Ethanol" magnets were added to all FFV's. Awareness and education on E-85 benefits and availability was delivered across the Y-12 Complex.

The Success

Y-12's FFV fleet powered on E-85 reduced consumption of gasoline by more than 15,500 gallons in FY 2006, and increased the E-85 used by the FFV fleet to 100%.



FFV drivers reported that their vehicles operated with no reduction in power, acceleration or payload, and maintenance records indicated that they had similar maintenance requirements and very little variance in fuel efficiency performance as compared to their petrol-powered counterparts.

The Pollution Prevented

This project resulted in elimination of an estimated 1,100 pounds of toxic air emissions for an overall reduction of 39% from emissions if standard gasoline had been used. Use of E-85 fuel resulted in the following estimated emission reductions: NOx 4.6 lb (10%), VOC 8.8 lb (15%), CO 1,092 lb (40%), and PM 1.3 lb (20%).

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